

Vector Ecology Research to Mitigate Tick-Borne Illnesses in Connecticut: A Entomological Approach to Public Health

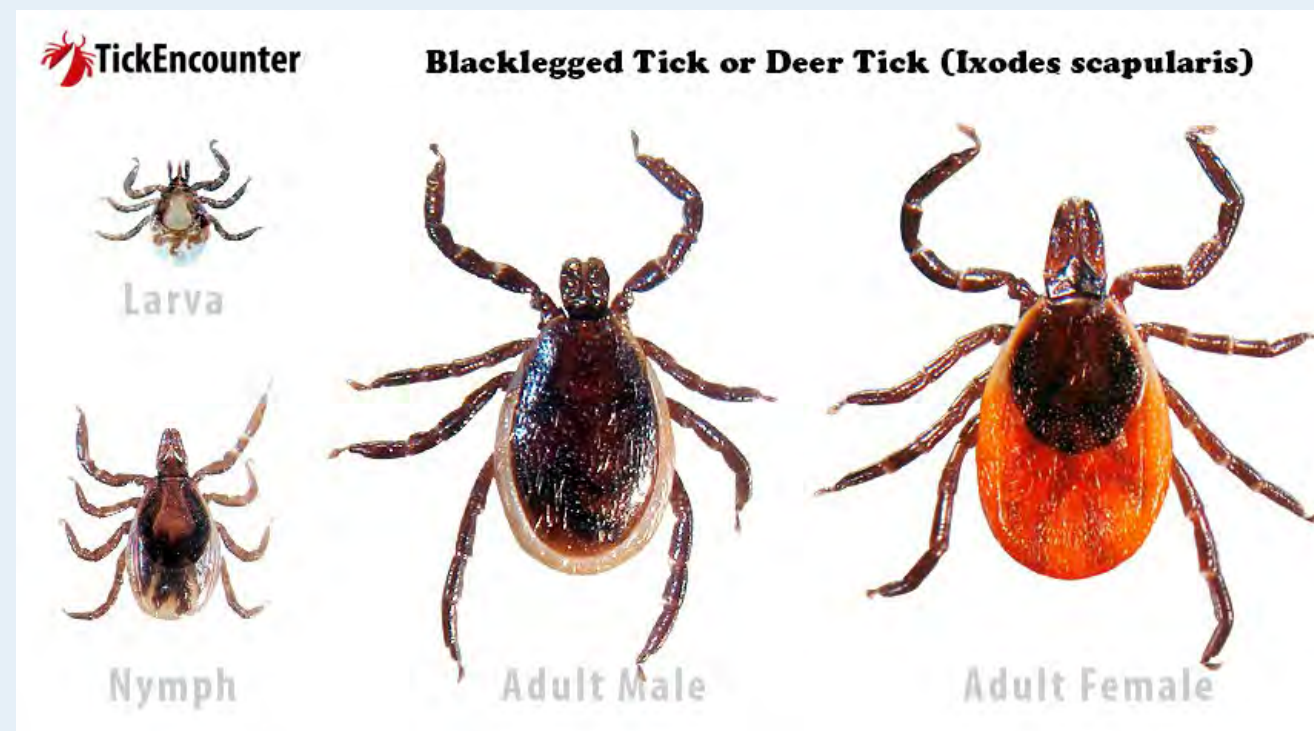
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(link to audio walkthrough of poster)



Background

- Several species of ticks are native to the state of Connecticut, including *Ixodes scapularis* (also known as deer or blacklegged ticks), which can transmit Lyme disease.
- Over 3,000 cases of Lyme are reported across the state each year (CDC, 2019)



- While ticks are most often encountered doing recreational activities in wooded areas, ticks can also be found in a variety of landscape types on residential properties
- There is still a need for effective tick mitigation strategies that are both feasible for homeowners and safe for other species in the ecosystem

Methods

Landscape / Vegetation Evaluation:

- 42 residential properties across Guilford & Branford, CT participated
- Suitable landscape features were identified at each property and sampled at each visit
- 7 rounds of sampling were done, starting 5/31 and ending 7/10
- For each property, the identified landscape features were sampled for ticks through a tick drag (see picture at right)
- All ticks collected were counted and speciated, with nymphs taken back to CAES for future pathogen analysis
- Average tick densities were calculated by dividing the total number of ticks found by the total area dragged (ticks/square meter, later converted to ticks/hectare)



Mitigation Strategies Evaluation:

- Of the 42 properties sampled above, 10 were selected to test the efficacy of a woodchip barrier between wooded areas and the property's grassy lawn
- Additionally, 7 areas across 5 properties were cleared using a leaf blower in the fall
- Controls for each intervention at the chosen sites were established in areas similar to the tested areas
- Tick sampling and calculations were the same as explained above for the vegetation evaluation

Collected Data & Results (Deliverable 1):

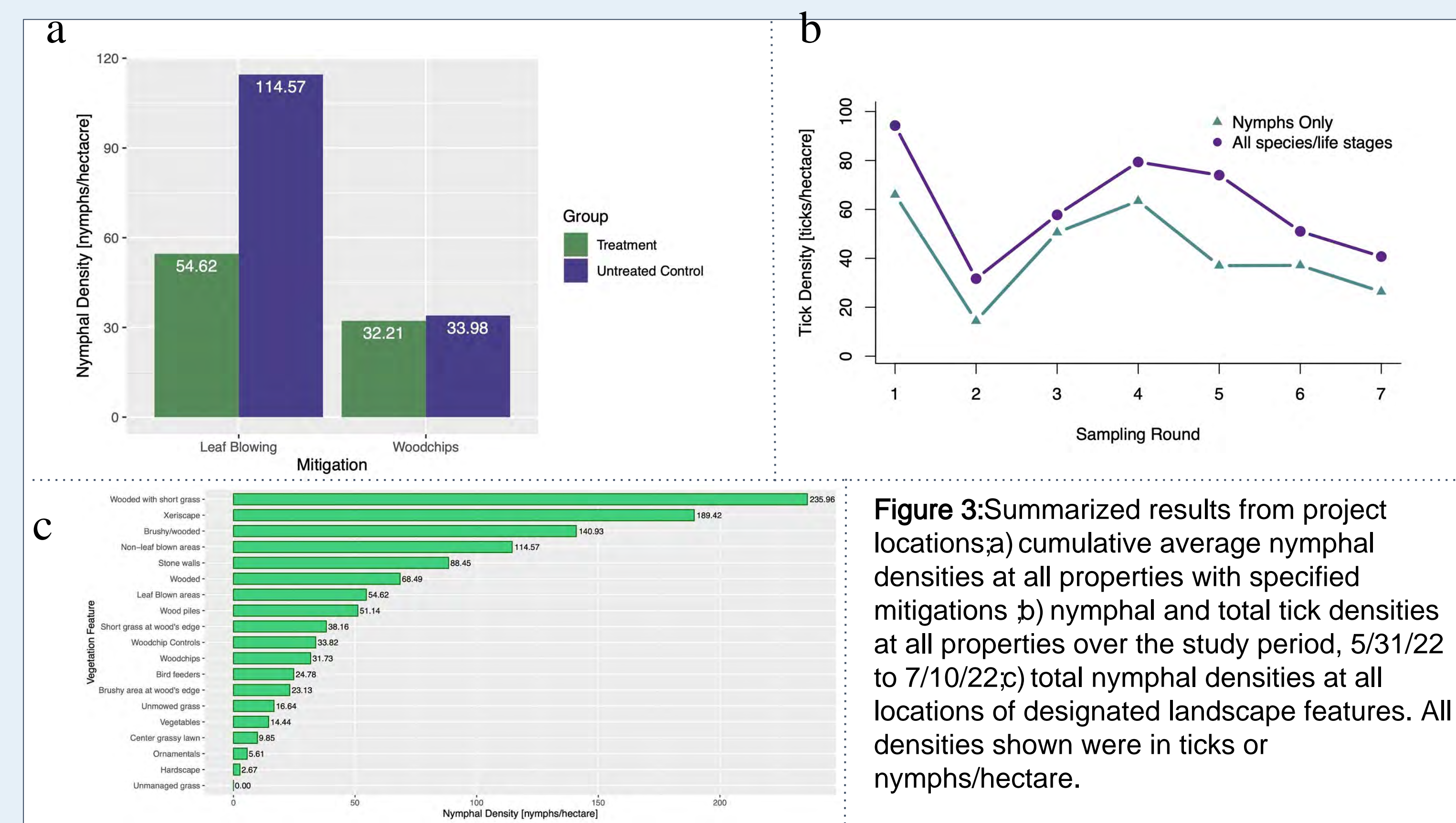


Figure 3: Summarized results from project locations: a) cumulative average nymphal densities at all properties with specified mitigations b) nymphal and total tick densities at all properties over the study period, 5/31/22 to 7/10/22 c) total nymphal densities at all locations of designated landscape features. All densities shown were in ticks or nymphs/hectare.

Outreach to Homeowners (Deliverable 2):

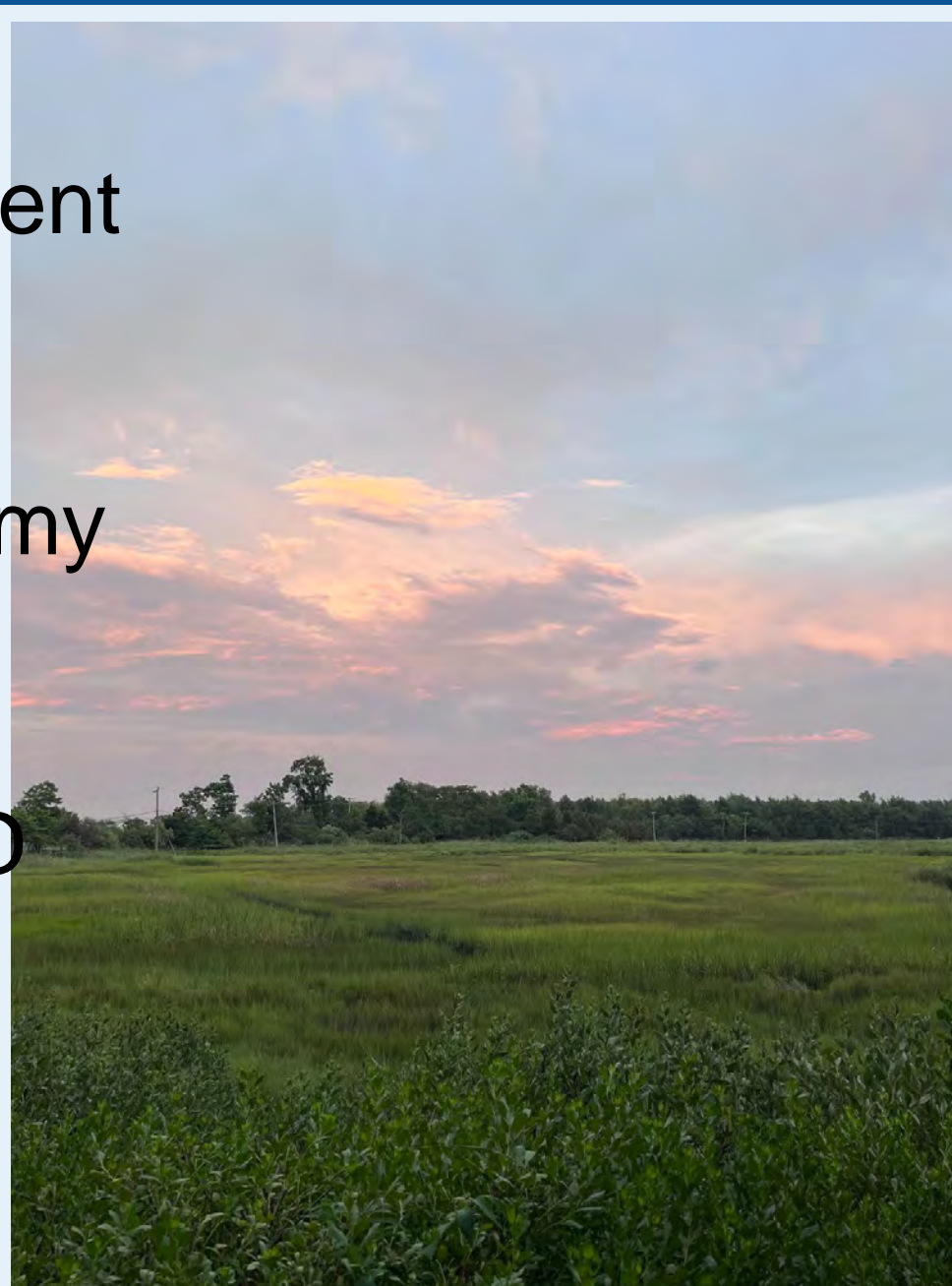
- Fact and findings sheets were prepared for 10 households that were the most interested in the study (determined by level of participation with me while I was sampling)
- Study findings were presented in simple language, with results from both an individual's home and the aggregate data presented
- Tips and suggestions were catered specifically to homeowners' expressed needs



(the above QR code will take you to an address redacted example of one of these outreach sheets)

Reflection & Public Health Takeaways:

- I was surprised by how much I enjoyed the field work element of my job this summer, an amazing opportunity to see how multidisciplinary disease management can be!
- Getting to interact with homeowners was great practice of my public health communication skills
- In addition to the project described above, I assisted with studies looking at pathogen prevalence in mice and COVID antibodies in deer
- Overall, I would highly recommend looking into vector management opportunities for an outside-of-the-box practicum opportunity
- Special thanks to my preceptors, coworkers, and CAES for an incredible summer!



Here are some pictures of the amazing places, people, and animals I worked with this summer: [left] a field in Norwalk, CT; [top] removing ticks from a sedated deer's ears, [bottom] my coworker (MPH student at Yale) setting out mouse food; myself & coworkers posing with a deer; [top] setting mouse traps, [bottom] a Lone Star tick; me giving an injection to reverse the deer tranquilizer